CLAIMS

1. A method for measuring an amount of strain of a bonded strained wafer in which at least one strained layer is formed on a single crystal substrate by a bonding method, wherein at least, the bonded strained wafer is measured with respect to two asymmetric diffraction planes with diffraction plane indices (XYZ) and (-X-YZ) by an X-ray diffraction method, a reciprocal lattice space map is created from the measured data, and the amount of strain of the strained layer is calculated from the peak positions for the respective diffraction planes of the single crystal substrate and the strained layer appearing on the reciprocal lattice space map.

2. The method for measuring an amount of strain according to Claim 1, wherein when the amount of strain of the strained layer is calculated, in the case that two peaks for the respective diffraction planes of the single crystal substrate appearing on the reciprocal lattice space map are located at symmetric positions with respect to a vertical axis passing through the origin of the reciprocal lattice space map, the peak positions for the strained layer are moved rotationally and modified

in the circumferential direction centering the origin so that the two peak positions for the respective diffraction planes of the same strained layer appearing on the reciprocal lattice space map is located symmetrically with respect to the vertical axis, and thereby the peak positions for the strained layer determined by the amount of strain are obtained.

3. The method for measuring an amount of strain according to Claim 1, wherein in the case that two peaks for the respective diffraction planes of the single crystal substrate are not located at the symmetric positions, in order that the peak of the single crystal substrate for any one of the asymmetric diffraction planes is located at the symmetric position to the peak of the single crystal substrate for the other of the asymmetric diffraction planes, at least the peak position for the strained layer for the said other asymmetric diffraction plane is moved in parallel, and then the peak positions for the strained layer are moved rotationally and modified in the circumferential direction centering the origin so that the two peak positions for the respective diffraction planes of the same strained layer appearing on the reciprocal lattice space map is

located symmetrically with respect to the vertical axis, and thereby the peak positions for the strained layer determined by the amount of strain are obtained.

4. The method for measuring an amount of strain according to any one of Claims 1 to 3, wherein as the single crystal substrate, a silicon single crystal is used.

5. The method for measuring an amount of strain according to any one of Claims 1 to 4, wherein the amount of strain to be measured is a lattice relaxation rate of a SiGe layer and/or a strain rate of a strained silicon layer.

6. The method for measuring an amount of strain according to any one of Claims 1 to 5, wherein the diffraction plane index (XYZ) is (113) or (224).

7. The method for measuring an amount of strain according to Claim 5 or 6, wherein when the lattice relaxation rate is calculated, peak positions for the SiGe layer in which the lattice relaxation rate becomes 0 % and 100 % are calculated from the rotated and modified peak positions for the SiGe layer, the lattice

relaxation rate is calculated by using the calculated peak positions.

8. The method for measuring an amount of strain according to Claim 5 or 6, wherein when the strain rate is calculated, a lattice constant of the strained silicon layer is calculated from the rotated and modified peak positions for the strained silicon layer, the strain rate is calculated by using the calculated lattice constant.